SIEMENS

Data sheet

3RM1002-1AA14



Direct starter, 3RM1, 500 V, 0.09 - 0.75 kW, 0.4 - 2 A, 110-230 V AC, screw terminals

product brand name	SIRIUS
product category	Motor starter
product designation	Direct-on-line starter
design of the product	with electronic overload protection
product type designation	3RM1
General technical data	
equipment variant according to IEC 60947-4-2	3
product function	Direct-on-line starter
 intrinsic device protection 	Yes
 for power supply reverse polarity protection 	No
suitability for operation device connector 3ZY12	No
power loss [W] for rated value of the current	
 at AC in hot operating state per pole 	0.1 W
 without load current share typical 	5.06 W
insulation voltage rated value	500 V
overvoltage category	III
surge voltage resistance rated value	6 kV
maximum permissible voltage for protective separation	
 between main and auxiliary circuit 	500 V
 between control and auxiliary circuit 	250 V
shock resistance	6g / 11 ms
vibration resistance	1 6 Hz, 15 mm; 20 m/s², 500 Hz
operating frequency maximum	1 1/s
reference code according to IEC 81346-2	Q
Substance Prohibitance (Date)	03/01/2017
SVHC substance name	Lead - 7439-92-1 Lead monoxide (lead oxide) - 1317-36-8
Weight	0.322 kg
product function	
direct start	Yes
reverse starting	No
product function short circuit protection	No
Electromagnetic compatibility	
EMC emitted interference according to IEC 60947-1	class A
EMC immunity according to IEC 60947-1	Class A
conducted interference	
 due to burst according to IEC 61000-4-4 	3 kV / 5 kHz
 due to conductor-earth surge according to IEC 61000-4-5 	2 KV
• due to conductor-conductor surge according to IEC 61000-4-5	1 KV
 due to high-frequency radiation according to IEC 61000- 	10 V

4-6	
field-based interference according to IEC 61000-4-3	10 V/m
electrostatic discharge according to IEC 61000-4-2	4 kV contact discharge / 8 kV air discharge
conducted HF interference emissions according to CISPR11	Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC
field-bound HF interference emission according to CISPR11	Class B for domestic, business and commercial environments; Class A for industrial environments at 110 V DC
Electrical Safety	
protection class IP on the front according to IEC 60529	IP20
touch protection on the front according to IEC 60529	finger-safe
Main circuit	
number of poles for main current circuit	3
design of the switching contact	Hybrid
design of the switching contact as NO contact for signaling function	OUT, electronic, 24 V DC, 15 mA
adjustable current response value current of the current- dependent overload release	0.4 2 A
minimum load [%]	20 %; from set rated current
type of the motor protection	solid-state
operating voltage rated value	48 500 V
relative symmetrical tolerance of the operating voltage	10 %
operating frequency 1 rated value	50 Hz
operating frequency 2 rated value	60 Hz
relative symmetrical tolerance of the operating frequency	10 %
operational current	
• at AC at 400 V rated value	2 A
 at AC-3 at 400 V rated value 	2 A
• at AC-53a at 400 V at ambient temperature 40 °C rated value	2 A
ampacity when starting maximum	16 A
operating power for 3-phase motors at 400 V at 50 Hz	0.09 0.75 kW
Inputs/ Outputs	
input voltage at digital input	
• at DC rated value	110 V
• with signal <0> at DC	040V
• for signal <1> at DC	79 121
input voltage at digital input	110.1/
• at AC rated value	110 V
• with signal <0> at AC	0 40 V 93 253 V
• for signal <1> at AC	30 200 V
input current at digital input • for signal <1> at DC	1.5 mA
tor signal <1> at DC with signal <0> at DC	0.25 mA
input current at digital input with signal <0> at AC	0.20 11/2
• at 110 V	0.2 mA
• at 230 V	0.4 mA
input current at digital input for signal <1> at AC	
• at 110 V	1.1 mA
• at 230 V	2.3 mA
number of CO contacts for auxiliary contacts	1
operational current of auxiliary contacts at AC-15 at 230 V maximum	3 A
operational current of auxiliary contacts at DC-13 at 24 V maximum	1 A
Control circuit/ Control	
type of voltage of the control supply voltage	AC/DC
control supply voltage at AC	
• at 50 Hz rated value	110 230 V
• at 60 Hz rated value	110 230 V
relative negative tolerance of the control supply voltage at AC at 60 Hz	15 %

mounting position vertical, horizontal, standing (observe derating) fastening method screw and snap-on mounting onto 35 mm DIN rail height 100 mm		
• arised bit210200 Vcontrol supply voltage frequency50 1/2• 1 rated value60 1/2• rated value10.%or failer negative tolerance of the control supply voltage rated value10.%0.0.%• initial value10.%• initial value0.%• initial value1.1• initial value0.%• initial value0.%• initial value1.1• initial value0.%• initial value1.1• initial value <td< th=""><th></th><th></th></td<>		
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DC	• 2 rated value	60 Hz
pc		15 %
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duration of inrush current peak• at AC at 110 V1 ms• at AC at 230 V1 ms• at AC at 230 V1 ms• at AC at 230 V at witching on f motor1 ms• at AC at 230 V at witching on f motor1 ms• at AC at 230 V at witching on f motor1 ms• at AC at 230 V at witching on f motor2 ms• mswitching state OFF with bypass circuit2.1 W• ne witching state ON with bypass circuit5.06 W• mswitching state ON60 90 ms• off-delay time60 90 msON-delay time60 90 ms• Off-delay time2 A• at 40 °C rated value2 A• at 40 °C rated value2 A• at 60 °C rated value2 A		
• at AC at 110 V1 ms• at AC at 230 V1 ms• at AC at 230 V at switching on of motor1 ms• at AC at 230 V at switching on of motor1 ms• at AC at 230 V at switching on of motor1 ms• at AC at 230 V at switching on of motor1 ms• newtor loss [W] in auxiliary and control circuit1 ms• in switching state OFF2.1 W• newtor loss circuit5.06 W• newtor loss circuit5.06 W• newtor loss circuit60 90 ms• of F-delay time60 90 ms• of Crated value2 A• at 40 °C rated value2 A• at 50 °C rated value2 A• at 60 °C rated value3 C		2 300 mA
• at AC at 230 V1 ms• at AC at 110 V at switching on of motor1 ms• at AC at 230 V at switching on of motor1 ms• at AC at 230 V at switching on of motor1 mspower loss [W] in auxiliary and control circuit1 ms• in switching state OFF2.1 W- with bypass circuit5.06 W• mit bypass circuit60 90 msON-delay time60 90 msOFF-delay time60 90 msOver Electronics2 A• at 40 °C rated value2 A• at 50 °C rated value2 A• at 60 °C rated	-	1 ms
• at AC at 110 V at switching on of motor1 ms• at AC at 230 V at switching on of motor1 mspower loss [W] in auxiliary and control circuit1 ms• in switching state OFF2.1 W- with bypass circuit5.06 W- with bypass circuit60 90 msON-delay time60 90 msOFF-delay time60 90 msOFF-delay time2.4operational current2.4• at 40 °C rated value2.4• at 55 °C rated value2.4• at 60 °C rated value3.5• at 60 °C rated value3.5 </th <th></th> <th></th>		
• at AC at 230 V at switching on of motor 1 ms power loss [W] in auxiliary and control circuit - • in switching state OFF 2.1 W - with bypass circuit 5.06 W - with bypass circuit 5.06 W - with bypass circuit 60 90 ms ON-delay time 60 90 ms OF-delay time 60 90 ms OF-delay time 2.1 W operational current 2.1 S • at 40 °C rated value 2.4 C • at 55 °C rated value 2.4 C • at 50 °C rated value 2.4 C • at 60 °C rated value		
power loss [W] in auxiliary and control circuit		
• in switching state OFF 2.1 W - with bypass circuit 2.1 W • in switching state ON - - with bypass circuit 5.06 W Response times 60 90 ms ON-delay time 60 90 ms OFF-delay time 60 90 ms ower Electronics - operational current 2 A • at 40 °C rated value 2 A • at 50 °C rated value 2 A • at 60 °C rated value 100 mm		1 1115
- with bypass circuit2.1 W• in switching state ON5.06 W- with bypass circuit5.06 WResponse times60 90 msON-delay time60 90 msOFF-delay time60 90 msOver Electronics60 90 msoperational current2 A• at 40 °C rated value2 A• at 50 °C rated value2 A• at 60 °C rated value2 A• box• conting position• conting position• conting vertical, horizontal, standing (observe derating)fastening methodio0 mmheight100 mm		
• in switching state ON5.06 W— with bypass circuit5.06 WResponse times60 90 msON-delay time60 90 msOFF-delay time60 90 msOver Electronics0Over Electronics2 A• at 40 °C rated value2 A• at 50 °C rated value2 A• at 55 °C rated value2 A• at 60 °C rated value10 mm	-	2.1.W
with bypass circuit 5.06 W Response times 60 90 ms ON-delay time 60 90 ms OFF-delay time 60 90 ms Ower Electronics 60 90 ms Over Electronics 2 A • at 40 °C rated value 2 A • at 50 °C rated value 2 A • at 55 °C rated value 2 A • at 60 °C rated value 3 Correcontal, standing (observe derating) <		2. Ι VV
Response times 60 90 ms OR-delay time 60 90 ms OFF-delay time 60 90 ms Power Electronics 2 operational current 2 A • at 40 °C rated value 2 A • at 50 °C rated value 2 A • at 55 °C rated value 2 A • at 60 °C rated value 2 A	-	5 00 M
ON-delay time 60 90 ms OFF-delay time 60 90 ms Power Electronics 0 operational current 2 A • at 40 °C rated value 2 A • at 50 °C rated value 2 A • at 55 °C rated value 2 A • at 60 °C rated value 2 A	••	5.06 W
OFF-delay time 60 90 ms ower Electronics		
Power Electronics operational current • at 40 °C rated value • at 50 °C rated value • at 55 °C rated value • at 60 °C rated value <th></th> <th></th>		
operational current 2 A • at 40 °C rated value 2 A • at 50 °C rated value 2 A • at 55 °C rated value 2 A • at 60 °C rated value <th>-</th> <th>60 90 ms</th>	-	60 90 ms
• at 40 °C rated value2 A• at 50 °C rated value2 A• at 55 °C rated value2 A• at 60 °C rated value3 A•		
• at 50 °C rated value 2 A • at 55 °C rated value 2 A • at 60 °C rated value • vertical, horizontal, standing (observe derating) • fastening method • screw and snap-on mounting onto 35 mm DIN rail • height 100 mm	•	
• at 55 °C rated value 2 A • at 60 °C rated value 2 A • at 60 °C rated value 2 A Installation/ mounting/ dimensions • mounting position • vertical, horizontal, standing (observe derating) • fastening method • screw and snap-on mounting onto 35 mm DIN rail • height 100 mm		
• at 60 °C rated value 2 A nstallation/ mounting/ dimensions vertical, horizontal, standing (observe derating) fastening method screw and snap-on mounting onto 35 mm DIN rail height 100 mm		
Installation/ mounting/ dimensions vertical, horizontal, standing (observe derating) fastening method screw and snap-on mounting onto 35 mm DIN rail height 100 mm		
mounting position vertical, horizontal, standing (observe derating) fastening method screw and snap-on mounting onto 35 mm DIN rail height 100 mm		2 A
fastening method screw and snap-on mounting onto 35 mm DIN rail height 100 mm	nstallation/ mounting/ dimensions	
height 100 mm	mounting position	vertical, horizontal, standing (observe derating)
	fastening method	screw and snap-on mounting onto 35 mm DIN rail
width 22.5 mm	height	100 mm
22.01111	width	22.5 mm

donth	141.6 mm
depth	141.6 mm
required spacing	
• with side-by-side mounting	
— forwards	0 mm
— backwards	0 mm
— upwards	50 mm
— downwards	50 mm
— at the side	0 mm
for grounded parts	
— forwards	0 mm
— backwards	0 mm
— upwards	50 mm
— at the side	3.5 mm
— downwards	50 mm
Ambient conditions	
installation altitude at height above sea level maximum	4 000 m; For derating see manual
ambient temperature	
during operation	-25 +60 °C
during storage	-40 +70 °C
during transport	-40 +70 °C
environmental category during operation according to IEC 60721	3K6 (no ice formation, only occasional condensation), 3C3 (no salt mist), 3S2 (sand must not get into the devices), 3M6
relative humidity during operation	10 95 %
air pressure according to SN 31205	900 1 060 hPa
Communication/ Protocol	
protocol is supported	
PROFINET IO protocol	No
PROFIsafe protocol	No
product function bus communication	No
protocol is supported AS-Interface protocol	No
Connections/ Terminals	
type of electrical connection	screw-type terminals for main circuit, screw-type terminals for control circuit
• for main current circuit	screw-type terminals
 for auxiliary and control circuit 	screw-type terminals
wire length for motor unshielded maximum	100 m
type of connectable conductor cross-sections for main contacts	
• solid	1x (0,5 4 mm²), 2x (0,5 2,5 mm²)
 finely stranded with core end processing 	1x (0,5 4 mm²), 2x (0,5 1,5 mm²)
connectable conductor cross-section for main contacts	
 solid or stranded 	0.5 4 mm²
 finely stranded with core end processing 	0.5 4 mm²
connectable conductor cross-section for auxiliary contacts	
 solid or stranded 	0.5 2.5 mm²
 finely stranded with core end processing 	0.5 2.5 mm²
type of connectable conductor cross-sections	
 for auxiliary contacts 	
— solid	1x (0,5 2,5 mm²), 2x (1,0 1,5 mm²)
-	1x (0,5 2,5 mm²), 2x (1,0 1,5 mm²) 1x (0.5 2.5 mm²), 2x (0.5 1 mm²)
— solid	
 — solid — finely stranded with core end processing 	1x (0.5 2.5 mm²), 2x (0.5 1 mm²)
 — solid — finely stranded with core end processing • for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross 	1x (0.5 2.5 mm²), 2x (0.5 1 mm²)
 — solid — finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section 	1x (0.5 2.5 mm²), 2x (0.5 1 mm²) 1x (20 14), 2x (18 16)
 — solid — finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section for main contacts 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12
 — solid — finely stranded with core end processing • for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section • for main contacts • for auxiliary contacts 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12
 — solid — finely stranded with core end processing • for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section • for main contacts • for auxiliary contacts UL/CSA ratings 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12
 — solid finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section for main contacts for auxiliary contacts UL/CSA ratings yielded mechanical performance [hp] 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12
 solid finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section for main contacts for auxiliary contacts UL/CSA ratings yielded mechanical performance [hp] for single-phase AC motor 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12 20 14
 — solid finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section for main contacts for auxiliary contacts UL/CSA ratings yielded mechanical performance [hp] for single-phase AC motor at 230 V rated value 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12 20 14 0.125 hp
 — solid finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section for main contacts for auxiliary contacts UL/CSA ratings yielded mechanical performance [hp] for single-phase AC motor at 230 V rated value for 3-phase AC motor 	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12 20 14
 solid finely stranded with core end processing for AWG cables for auxiliary contacts AWG number as coded connectable conductor cross section for main contacts for auxiliary contacts UL/CSA ratings yielded mechanical performance [hp] for single-phase AC motor at 230 V rated value for 3-phase AC motor	1x (0.5 2.5 mm ²), 2x (0.5 1 mm ²) 1x (20 14), 2x (18 16) 20 12 20 14 0.125 hp 0.333 hp

operational current a	at AC at 480 V according	to UL 508 2	A		
Approvals Certificates					
General Product App	proval				
CCC	UK CA	CE EG-Konf.	Confirmation		EHC
EMV	Test Certificates	other	Railway	Environment	
	Type Test Certific- ates/Test Report	<u>Confirmation</u>	Special Test Certific- ate	Environmental Con- firmations	

Further information

Information on the packaging https://support.industry.siemens.com/cs/ww/en/view/109813875 Information- and Downloadcenter (Catalogs, Brochures,...)

https://www.siemens.com/ic10

Industry Mall (Online ordering system)

https://mall.industry.siemens.com/mall/en/en/Catalog/product?mlfb=3RM1002-1AA14

Cax online generator

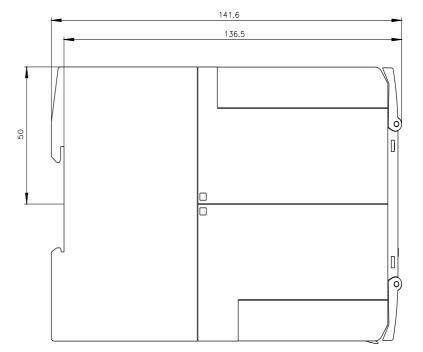
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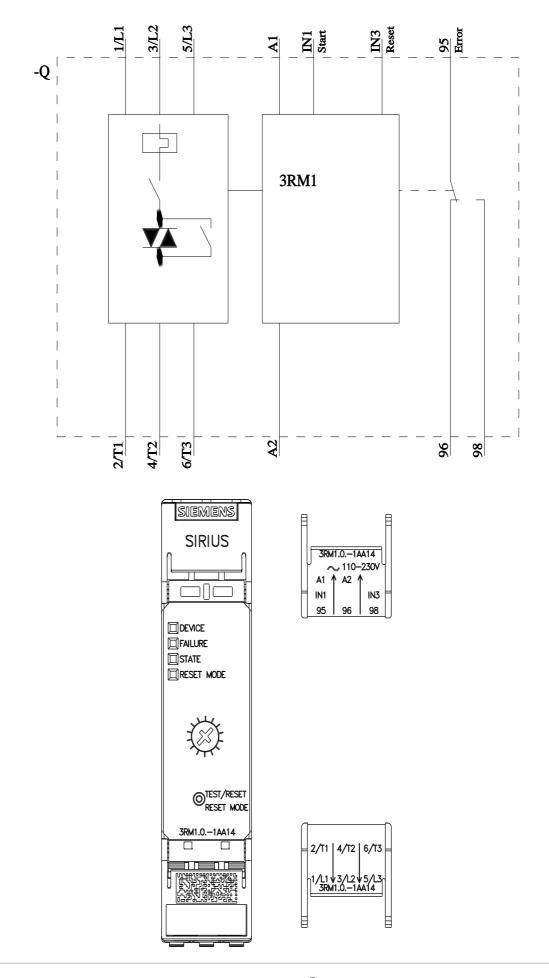
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https://support.industry.siemens.com/cs/ww/en/ps/3RM1002-1AA14

Image database (product images, 2D dimension drawings, 3D models, device circuit diagrams, EPLAN macros, ...) http://www.automation.siemens.com/bilddb/cax_de.aspx?mlfb=3RM1002-1AA14&lang=en







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